Quarterly Progress Report
July - September 1994
Boise, Idaho

9/28/94 1.2

Prepared for

Van Waters & Rogers Inc.
6100 Carillon Point
Kirkland, Washington 98033

HLA Project No. 22947 03

Bethany P. Flynn

Bethany P. Flynn
Senior Geologist

Christopher R. Smith

Christopher R. Smith, P.G. 736
Principal Hydrogeologist

September 28, 1994

Harding Lawson Associates
Engineering and Environmental Services
105 Digital Drive, P.O. Box 6107
Novato, California 94948 - (415) 883-0112

Harding Lawson Associates

Engineering and Environmental Services

HLA

CONTENTS

TABLE

PLATE

APPENDIXES

DISTRIBUTION

EXECUTIVE SUMMARY

This progress report presents data collected and summarizes activities performed in association with ongoing investigations by VW&R in Boise, Idaho, from June 24, 1994, through September 23, 1994. Activities to be conducted during the next reporting period are also presented.

Activities conducted under the Water Supply Order during the reporting period include:

- Connecting residents to the Boise Water Corporation (BWC) water system as authorization is received by VW&R
- Conducting quarterly sampling
- Sending out a well data survey form and authorization request to residents within the Affected Area to conduct investigative activities and collect water samples from deep domestic wells or wells having unknown depths
- Submitting a letter to the Department to provide an anticipated schedule for completing tasks associated with the Water Supply Order; updated schedule is provided in this quarterly report.

Work planned for the next reporting period includes:

- Resampling wells with tetrachloroethylene (perc) concentrations above the analytical detection limit but below 5 micrograms per liter (μg/l) and other selected wells in the Preliminary Study Area, (PSA) as part of a quarterly sampling program
- Continuing water line connections as authorizations are received and reimbursement for 1 year of BWC utility costs
- Evaluate well evaluation responses received from residents and follow up on unreturned forms
- Conduct well evaluation activities.

Activities conducted under the PSA Order during the reporting period include:

- Continue Risk Assessment activities
- Sampling the monitoring well at 2212 N. Sunrise Avenue
- Monitoring the transducer and data logger installed in the Sunrise Well
- Install one monitoring/extraction well in accordance with the Soil Boring SAP
- Submit draft letter report associated with the Soil Boring SAP
- Submit final Interim Remedial Measures Work Plan
- Install two groundwater monitoring wells in accordance with the Interim Remedial Measures Work Plan
- Continuing access negotiations with property owners for the installation of monitoring wells and the monitoring/extraction well and siting a groundwater treatment system.

Activities to be conducted under the PSA Order during the next reporting period include:

- Install one monitoring/extraction well along N. Five Mile Road in accordance with the Soil Boring SAP
- Install two groundwater monitoring wells in accordance with the Interim Remedial Measures Work Plan
- Continuing activities associated with completion of the Risk Assessment
- Submit a Geophysical SAP
- Submit the Site Investigation report and Risk Assessment

Work conducted under the Mall Order during the reporting period included:

- Submitting a response to comments received from Division of Environmental Quality related to the Draft Mall Risk Assessment
- Submitting the Mall Site Investigation Report/Remedial Action Plan and responding to comments received from the Division of Environmental Quality
- Monitoring the soil vapor extraction system in accordance with permit requirements.

Work planned for the next reporting period in association with the Mall Order includes:

- Monitoring the soil vapor extraction system
- Continue negotiations related to siting a groundwater treatment system at the mall
- Finalize the Site Investigation Report/Remedial Action Plan and prepare for the RAP's public comment period.

1.0 INTRODUCTION

This progress report presents data collected and summarizes activities performed in association with ongoing Van Water & Rogers Inc. (VW&R) investigations in Boise, Idaho, from June 24, 1994, through September 23, 1994. This progress report has been prepared by Harding Lawson Associates (HLA) for the sole use of VW&R and the State of Idaho Department of Health and Welfare, Division of Environmental Quality (Department), the only intended beneficiaries of our work. No other party should rely on the information contained herein without prior written consent of HLA.

This report has been prepared to meet the requirements of the Consent Orders dated October 9, 1992 (Boise Mall and Preliminary Study Area [PSA] Orders), between VW&R and the Department. The scope of work for this report was originally outlined in *Exhibit 3, Work Plan, Boise Town Square Mall Supplemental Investigation and Final Remediation, Boise, Idaho* (*HLA, 1992a*). This report presents a summary of activities conducted during the reporting period and activities to be conducted during the next reporting period associated with the Water Supply Order dated January 3, 1992, and the PSA and Boise Mall Orders.

2.0 WATER SUPPLY ORDER

2.1 Work Conducted During the Reporting Period

Activities conducted under the Water Supply Order (WSO) during the reporting period included:

- Connecting residents to the Boise Water Corporation (BWC) water system as authorization is received by VW&R
- Conducting quarterly sampling of wells historically containing tetrachloroethylene (perc) above the analytical detection limit but below the EPA's maximum contaminant level (MCL) of 5 micrograms per liter ($\mu g/l$) and other select wells
- Sending out a well data survey form and authorization request to residents within the Affected Area to conduct investigative activities and collect water samples from domestic wells having unknown depths or depths greater than 75 feet
- Submitting a letter to the Department to provide an anticipated schedule for completing tasks associated with the Water Supply Order.

2.1.1 Quarterly Sampling

In accordance with requirements of the WSO, wells containing perc concentrations above the analytical detection limit but below the MCL of 5 $\mu g/l$ and other selected indicator wells were sampled to monitor the dissolved perc concentration in groundwater. Groundwater sampling was conducted on August 11, 1994. Prior to sampling, authorization was obtained from well owners to collect samples from their wells. Two wells normally sampled as part of the regular quarterly monitoring program were not sampled due to an inoperative pump at one location and a scheduling conflict at the other. Additionally, the monitoring well at 2212 Sunrise Avenue was sampled.

Sample collection activities were performed in accordance with the Quality Assurance Project Plan (QAPP) and are described in the following sections (*HLA, 1992b*). The sampling method used to collect groundwater samples from the private wells was a function of well construction and access. In general, wells were purged with their installed pumps for a minimum of 5 minutes and until the pH, temperature, and conductivity readings stabilized. Following purging activities, groundwater samples were collected from the discharge line at the access point closest to each well. The Sunrise monitoring well was purged a maximum of three well volumes using a polyvinyl chloride (PVC) bailer, and then sampled using a stainless steel bailer. All samples were placed in sample containers appropriate for the required analysis. All samples were placed in a cooler that was chilled to a temperature of approximately 4 degrees Celsius and sent under chain of custody via overnight courier to Analytical Technologies, Inc. (ATI), Renton, Washington.

Duplicate samples were collected from 3 wells and laboratory-prepared trip blanks were shipped in the coolers along with the well samples to the analytical laboratory.

All samples were analyzed by ATI for halogenated volatile organic compounds (VOCs) using EPA Test Method 8010. Specific analytical results obtained from private well samples are confidential. Two samples collected from an indicator well contained perc at concentrations up to 270 $\mu g/l$ which is greater than the EPA's MCL of 5 $\mu g/l$. The concentrations detected in the indicator well correspond to concentrations previously detected. Perc was also detected in 12 of 14 samples from other wells at concentrations up to 4.6 $\mu g/l$ which is above the detection limit but below the MCL. Trichloroethene (TCE) was detected in two well samples at concentrations of 0.3 $\mu g/l$ in both samples. The concentration of TCE detected at this location corresponds to previously detected concentrations. 1,1,1-Trichloroethane (1,1,1-TCA) was detected in one well at 0.2 $\mu g/l$. The detection of 1,1,1-TCA at the detection limit of 0.2 μg/l is suspect and will be carefully evaluated at the next quarterly sampling event. Halogenated VOCs were not detected in the trip blank.

Evaluation of quality assurance/quality control data indicated that the data are accurate and precise (Table 1). The data also met the method-specified holding times. Overall completeness was 100 percent and exceeds the goals specified in the QAPP (*HLA, 1992b*).

The individual results of the sample analyses have been provided under separate cover to each of the respective well owners.

2.1.2 Well Evaluation and Sampling Request

Well evaluation and sampling request forms were mailed to approximately 30 residents within the Affected Area owning deep or unknown depth wells. The purpose of these forms was to collect updated information regarding well use and to obtain authorization to evaluate well construction details and collect geologic information. To date, approximately ten responses have been received. The response period is scheduled to end at the end of September. If responses are not received, additional efforts will be made to contact well owners to obtain updated information and authorization to evaluate well construction. The schedule for this program is dependent on the response to the sampling request form. Sampling as part of the well evaluation effort is scheduled to begin in late September.

2.2 Work Planned for Next Reporting Period

Wells with concentrations of perc above the analytical detection limit but below the MCL of 5 μg/l and other selected wells will continue to be sampled on a quarterly basis. Sampling activities for the third quarter of 1994 are currently scheduled for mid-November.

Activities relating to well evaluation associated with the WSO will continue during the next quarter. Followup enquiries will made to residents who have not responded to the well evaluation and sampling form. Groundwater samples will be collected from wells where authorization has been granted.

Connections to water mains will continue during the next reporting period until all connections are completed for properties whose owners have provided written authorization to VW&R. Reimbursement for 1 year of BWC water utility costs continues for west Boise residents as requests are received by VW&R.

3.0 PRELIMINARY STUDY AREA ORDER

3.1 Work Conducted During the Reporting Period

Activities conducted under the Preliminary Study Area (PSA) Order during the reporting period included:

- Continuing Risk Assessment activities
- Sampling the monitoring well at 2212 N. Sunrise Avenue
- Monitoring the transducer and data logger installed in the Sunrise Well
- Installing one monitoring/extraction well in accordance with the Soil Boring SAP
- Submitting draft letter report associated with the Soil Boring SAP
- Submitting final Interim Remedial Measures Work Plan
- Installing two groundwater monitoring wells in accordance with the Interim Remedial Measures Work Plan
- Continuing access negotiations with property owners for the installation of monitoring wells and the monitoring/extraction well and siting a groundwater treatment system.

3.1.1 Risk Assessment Activities

The risk assessment for the PSA is continuing. Data collected during this quarter will be evaluated as part of the risk assessment.

3.1.2 Monitoring Well Sampling

The monitoring well at 2212 N. Sunrise Avenue was sampled as part of the regularly scheduled quarterly sampling program. The results have been included in the WSO section of this report but are also reported here. Prior to sampling, three well volumes of water were removed from the well using a clean PVC bailer. The well was then sampled with a stainless steel bailer following procedures described in the QAPP (*HLA, 1992b*). The sample was analyzed for VOCs using EPA Test Method 8010. Perc was detected in the well sample at a concentration of 0.4 μg/l. No other VOCs were detected in the well sample.

3.1.3 Sunrise Well - Water Level Monitoring

Water level data collected from the Sunrise Well during the reporting period indicate the shallow aquifer is not affected by pumping of the Bali Hai Community Well. The height of the water column above the transducer installed in the Sunrise Well increased as depicted on Plate 1. Water level data will continue to be collected during the next reporting period.

3.1.4 Installation and Sampling of an Monitoring/Extraction Well Along N. Five Mile Road

The southernmost monitoring/extraction well was installed along N. Five Mile Road from July 7 to July 14, 1994 in accordance with the Soil Boring SAP. Details of the installation, development and sampling of this well are presented in the draft letter report submitted to the Department on September 23, 1994 (*HLA, 1994c*). The well was installed by Hiddleston Drilling and Pump of Mountain Home, Idaho under the supervision of a HLA field geologist. The well was drilled in two phases. During the first phase, groundwater quality conditions with depth were defined through collection of groundwater samples at 10-foot intervals using a Hydropunch™ sampler driven by a hollow-stem auger drill rig. Samples were collected at approximate depths of 10 feet, 20 feet, and 30 feet and analyzed for volatile organic compounds (VOCs) utilizing EPA Method 8010. Collection of samples from depths greater than 30 feet was not possible because gravel prevented the sampler from being driven any further. Perc and TCE were detected at concentrations of 5.5 μg/l and 1.0 μg/l, respectively, in the 10-foot sample. Perc was the only compound detected in samples collected from the 20-foot and 30-foot depth intervals. It was detected at concentrations of 2.7 μg/l and 1.6 μg/l in the 20-foot and 30-foot samples, respectively. Based on the analytical data and discussions with the Department, the depth of the monitoring/extraction well was set at approximately 65 feet.

The second phase of the well installation commenced with the completion of the chemical profiling activities and included drilling of the well's borehole, construction of the well, and well development activities. A 12-inch-diameter borehole was drilled to a depth of 65 feet using a cable tool drill rig. A lithologic log was prepared by HLA based on drill cuttings. Materials encountered during the drilling of the borehole included silty sand, sand and sandy gravel. The monitoring/extraction well was constructed of 50 feet of 8-inch-diameter stainless steel wire-wrapped screen connected to a 15-foot length of 8-inch-diameter flush joint stainless steel casing. A sand pack was installed from the bottom of the well to approximately 4 feet above the top of the screen. A 2-foot-thick bentonite pellet seal was constructed above the sand pack. Bentonite chips were placed in the remaining annulus. A concrete utility vault was installed around the top of the well casing. A copy of the lithologic and well construction log is included in Appendix A.

The well was developed by Hiddleston Drilling and Pump the week following completion of well construction activities. The well was developed by pumping approximately 1,000 gallons of water from the well while raising and lowering the submersible pump.

A groundwater sample and duplicate sample were collected from the well on August 15, 1994 following evacuation of at least three well volumes of water from the well. The samples were analyzed for VOCs utilizing EPA Test Method 8010 by ATI. Perc was detected in the samples at concentrations of 1.5 μg/l and 1.7 μg/l. Analytical results for both the groundwater chemical profiling and the samples collected from the installed well are summarized in Table 2. A copy of the laboratory analytical reports are included in Appendix B.

Drill cuttings and well evacuation water were placed in appropriate containers and temporarily stored onsite pending identification of offsite disposal alternatives.

3.1.5 Interim Remedial Measures Work Plan

The final IRM Work Plan was submitted to the Department during September 1994. Remedial measures to be implemented at the downgradient end of the Affected Area are described in this work plan. The two monitoring/extraction wells described in the Soil Boring SAP will be pumped to create a hydraulic barrier at the downgradient end of the Affected Area thereby preventing downgradient migration of perc-containing groundwater. Extracted groundwater will be treated to remove perc and discharged to the Sargent Drain. Negotiations with area property owners to site the treatment system are continuing.

3.1.6 Installation of Groundwater Monitoring Wells

Two groundwater monitoring wells were installed along N. Five Mile Road to be used to monitor the effectiveness of the interim remedial measures. A 6-inch-diameter borehole was drilled to a depth of 40 feet below ground surface using a hollow-stem drill rig. Each well consists of 30 feet of 2-inch-diameter, 0.010-inch, Schedule 40 PVC well screen and a 10-foot length of 2-inch-diameter, flush joint, Schedule 40 PVC casing. A sand pack was installed from the bottom of the well to approximately 2 feet above the well screen. A 2-foot-thick bentonite pellet seal was constructed above the sand pack. The remaining well annulus was filled with bentonite chips.

The wells were developed following their construction by removing approximately 50 gallons of water using a bailer.

3.2 Work Planned for the Next Reporting Period

Work activities associated with completion of the PSA Risk Assessment will continue during the next quarter.

Once access is granted, the northernmost monitoring/extraction well will be installed along N. Five Mile Road in accordance with the PSA Soil Boring SAP (*HLA, 1993b*).

A Geophysical SAP will be submitted to the Department identifying data gaps and any additional geophysical surveys that may be necessary.

Two additional groundwater monitoring wells will be installed along N. Five Mile Road as part of the IRM Work Plan. Groundwater samples will be collected from all four of the monitoring wells associated with the IRM Work Plan. These wells will be used to monitor the effectiveness of the interim remedial measures.

4.0 BOISE MALL ORDER

4.1 Work Conducted During the Reporting Period

The following activities were conducted during the reporting period:

- Submitting a response to comments received from Division of Environmental Quality related to the Draft Mall Risk Assessment
- Submitting the Mall Site Investigation Report/Remedial Action Plan and responding to comments received from the Division of Environmental Quality
- Monitoring the soil vapor extraction system and collecting air samples in accordance with permit requirements.

4.1.1 Risk Assessment - Response to Comments

A conference call was held between VW&R, HLA, and the Department on July 14, 1994 to discuss the Department's comments relating to the risk assessment. As discussed in the conference call, all the Department's comments will be addressed in the final report. The purpose of the call was to clarify and obtain consensus from the Department on certain issues prior to finalizing the risk assessment document. A letter to the Department dated July 18, 1994 provides the specific responses that will be provided in the final document. The document will be finalized upon receipt of an approval letter from the Department.

4.1.2 Mall Site Investigation Report/Remedial Action Plan

The Mall Site Investigation Report/Remedial Action Plan (SI/RAP) was submitted to the Department on July 27, 1994. A conference call was held between VW&R, HLA, and the Department on September 14, 1994 to discuss the Department's comments relating to the risk assessment. Responses to the Department's comments are in preparation. The purpose of the SI was to assess the nature and extent of VOCs in soil, soil gas, and groundwater; identify potential migration pathways and potential receptors; and evaluate the potential risk to human health and the environment. Conclusions of the SI/RAP are as follows:

- Soil above the water table is no longer considered to be a source of PCE at the site and, therefore, will not require any additional remediation.
- Dissolved perc is present in the upper 100 feet of the shallow aquifer in the immediate vicinity of the former perc aboveground storage tank (AST), and the upper 75 feet of the shallow aquifer downgradient of the former perc AST.
- The Risk Assessment concluded that remediation of the groundwater is not necessary to protect human health or the environment with respect to the complete exposure pathways identified for the site. Groundwater remediation will commence, nonetheless, to prevent migration of VOCs downgradient of locations where other types of exposure may occur to human and/or ecological receptors.

The purpose of the remedial action plan was to develop remedial goals; identify, screen, and evaluate remedial technologies considered applicable to the site-specific conditions; and develop appropriate remedial alternatives.

The evaluation of remedial alternatives showed that air sparging and vapor extraction coupled with groundwater extraction and treatment using either carbonaceous adsorbent or air stripping would be effective in the long term, implementable, reduce potential excess risk to downgradient receptors and comply with applicable or relevant and appropriate requirements (ARARs) for groundwater.

4.1.3 Soil Vapor Extraction System

The soil vapor extraction (SVE) system operated continuously between July and September 1994 with the exception of days the system was shut down to replace spent carbon and conduct maintenance. To date, over 1,700 pounds of perc have been removed from the subsurface. Daily measurements of the total VOC concentrations in the influent, effluent, mid-stream, and in the vapor monitoring wells continue to be made while the system is operating. These measurements are made using an Organic Vapor Meter (OVM) Model 580B calibrated to a 100 ppm isobutylene standard. Influent concentrations have typically been less than 5 parts per million which would further support the previous conclusion that the soil in the vicinity of the former above ground perc tank has been remediated.

4.2 Work Planned for the Next Reporting Period

The SVE system will be operated as designed and as specified in the operating permit. The final Mall Site Investigation Report/Remedial Action Plan will be submitted to the Department upon resolution of outstanding issues. VW&R will continue activities to gain access to property to site a groundwater treatment system.

5.0 SCHEDULE

Revised schedules for the Mall, PSA, and WSO Order activities are shown in Tables 3 through 5. The dates for completion of activities are estimated and are dependent on access and subcontractor availability.

6.0 REFERENCES

Harding Lawson Associates, 1991. *Soil Boring Investigation, Former VW&R Facility, Boise, Idaho.* December 19.

_____, 1992a. *Exhibit 3, Work Plan, Boise Town Square Mall Supplemental Investigation and Final Remediation, Boise, Idaho.* September 8.

_____, 1992b. *Quality Assurance Project Plan, Boise Mall and Preliminary Study Area Work Plans, Boise, Idaho.* November 2.

_____, 1993a. *Affected Area, Boise Idaho.* Letter to Ron Lane, Idaho Department of Health and Welfare, Division of Environmental Quality. March 24.

_____, 1993b. *Soil Boring Sampling and Analysis Plan, Preliminary Study Area, Boise, Idaho.* August 13.

_____, 1994a. Letter to Ron Lane, Idaho Department of Health and Welfare, Division of Environmental Quality. May 16.

_____, 1994b. *Draft Risk Assessment, Boise Towne Square Mall, Boise, Idaho.* May 31.

_____, 1994c. *Extraction Well Installation, Letter to Ron Lane, Idaho Department of Health and Welfare, Division of Environmental Quality.* September 15.

TABLES

TABLES

Table 1. Quality Assurance Summary
Quarterly Progress Report
July-September 1994

Quality Control Sample	Acceptance Criterion[1]	Number of Analyses	Number of Analyses Within Acceptance Criterion	Percent of Analyses Within Acceptance
FIELD				
Trip blank	No compounds detected	29	29	100%
Field duplicate	100% RPD	87	87	100%
LABORATORY				
Method Blank	No compounds detected	58	58	100%
Matrix Spike	60-150%	12	12	100%
Matrix Spike duplicate	60-150%	6	6	100%
Surrogate Spike recovery	70-130%	16	16	100%
Surrogate Spike recovery duplicate	70-130%	3	3	100%

Overall Completeness: 211/211

1 Acceptance criterion specified in the QAPP (*HLA, 1992b*).

Table 2. Groundwater Sample Results, FMEW-1
Quarterly Progress Report
July-September 1994

Sample Number	Sample Date	Location	Depth (feet)	Sample Type	Perc Concentration (μg/l)	Other Detected Analytes (μg/l)
58983	7/7/94	FMEW-1 boring	10	Hydropunch	5.5	TCE-1.0
58984	7/7/94	FMEW-1 boring	20	Hydropunch	2.7	ND
59037	7/8/94	FMEW-1 boring	30	Hydropunch	1.6	ND
94081501	8/15/94	FMEW-1 well	NA	Well	1.5	ND
94081502	8/15/94	FMEW-1 well (Dup)	NA	Well	1.7	ND
94081503	8/15/94	Trip Blank	NA	QC	ND <0.2	ND

Table 3. Boise Mall Order Schedule
Quarterly Progress Report
July - September 1994

Activity	Schedule Dependency	Estimated Start Date	Estimated Completion Date	Comments
Draft Mall SI/RAP		27-Jul-94	27-Jul-94	Actual submittal on 27-Jul-94
Final Mall SI/RAP	Dependent on resolution of comments.	2-Sep-94	30-Sep-94	
Public Comment Period and Revisions	Dependent on approval of the Final SI/RAP by the IDEQ	15-Oct-94	15-Nov-94	Comment period may be extended for an additional 30 days
Final Mall SI/RAP	60 days after close of Public Comment Period	15-Nov-94	15-Jan-95	Assumes 30 day revision period and 30 day IDEQ Review period.
Remedial Action Implementation Monitoring Plan	60 days after Final Mall SI/RAP	15-Jan-95	15-Mar-95	Assumes 30 day preparation and 30 day IDEQ Review Period.
Implement Remedial Action	6 weeks after approval of Final RAI Plan.	15-Mar-95	15-May-95	Assumes 14 day response period for draft plan.

Notes:

1. Assumes a 30-day approval process by IDEQ
2. Actual dates will be updated on a quarterly basis as the task date approaches

Table 4. PSA Order Schedule
Quarterly Progress Report
July - September 1994

Activity	Schedule Dependency	Estimated Start Date	Estimated Completion Date	Comments
Complete Soil Boring SAP field program (install extraction/ monitoring wells on Five Mile Rd)	Access agreements and subcontractor availability	6-Jul-94	31-Jul-94	
Sample extraction well/ prepare letter report	Dependent on well completion	15-Aug-94	23-Sep-94	
Geophysical Sampling and Analysis Plan	2 weeks after completion of Soil Boring Field Program and receipt of final laboratory data	6-Oct-94	6-Oct-94	
Geophysical Field Work (if necessary)	2 weeks after IDEQ approval of Geophysical SAP	21-Nov-94	21-Dec-94	Assumes 30 day approval process for Geophysical SAP
Phase I Site Investigation/ Risk Assessment Report	8 weeks after completion of geophysical field work	21-Feb-95	21-Feb-95	
Phase II Work Plan	Submitted concurrently with Phase 1 report	21-Feb-95	21-Feb-95	
Phase II Field Work	Begins 2 weeks after IDEQ approval of Phase II Work Plan	5-Apr-95	4-May-95	
Phase II Report	4 weeks after receipt of all final laboratory data from field program	5-Jul-95	5-Jul-95	
Remedial Action Plan	10 weeks after IDEQ approval of Phase II Report	15-Nov-95	15-Nov-95	
Public Comment Period	Begins with IDEQ approval of RAP			

Notes:

1. Assumes a 30-day approval process by IDEQ
2. Dependent on field conditions and subcontractor availability
3. Actual dates will be updated on a quarterly basis as the task date approaches

Table 5. Water Supply Order Schedule
Quarterly Progress Report
July - September 1994

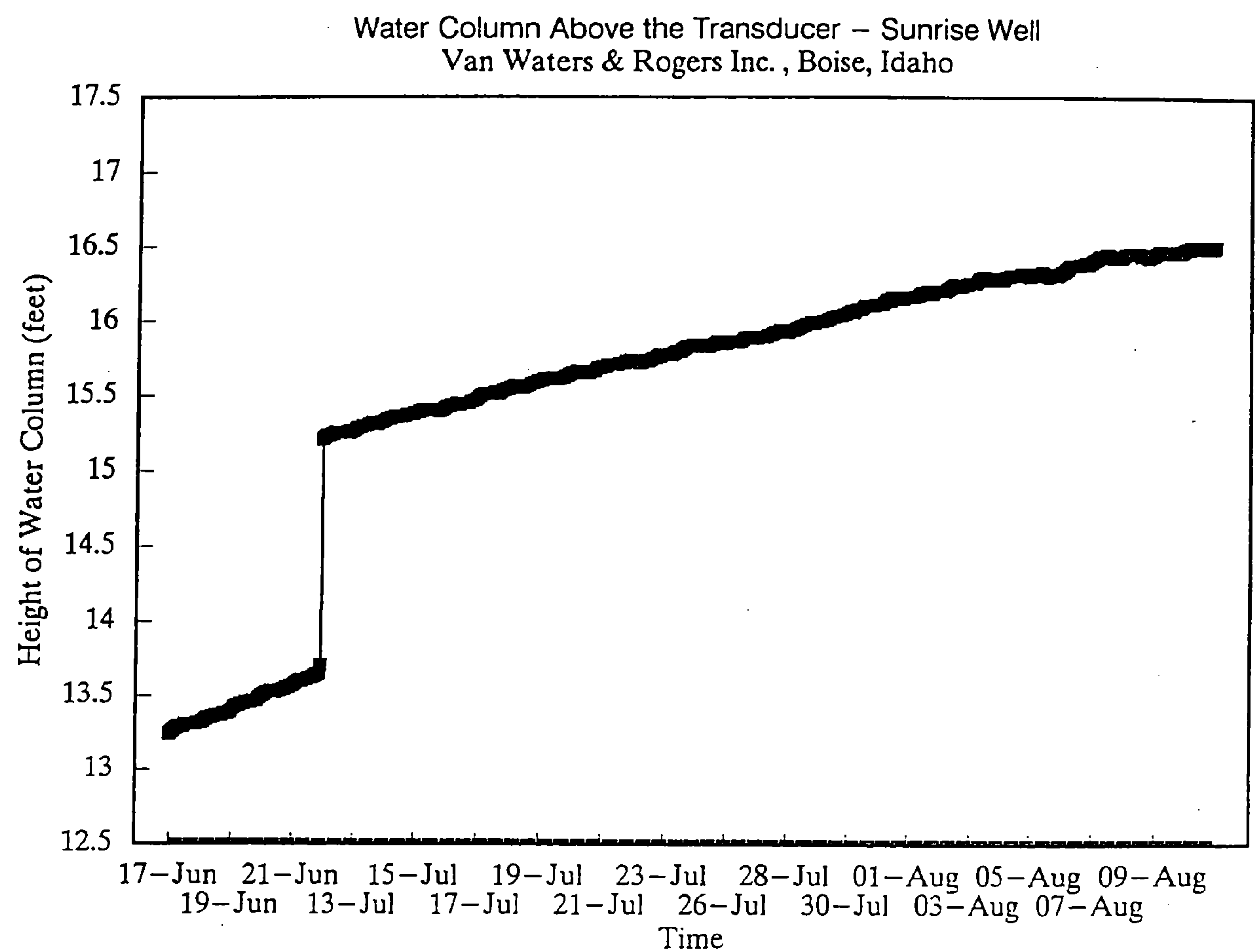
Activity	Schedule Dependency	Estimated Start Date	Estimated Completion Date	Comments
Send out letter to residents		25-Jul-94	29-Jul-94	
Response from residents		1-Aug-94	30-Sep-94	Extended reponse period by 4 weeks
Follow up on survey		1-Oct-94	31-Oct-94	
Sample Wells		26-Sep-94	31-Oct-94	Will sample wells of residents who return authorization form
Evaluate Well Depths	Bosie Water Corp. availability	1-Oct-94	31-Oct-94	Dependent on receipt of authorization forms.
PSA RA Complete		21-Feb-95	21-Feb-95	Dependent on PSA schedule
Evaluate Options	Dependent on approval of PSA Risk Assessment	21-Feb-95	21-Mar-95	Estimate 3 to 4 weeks after completion of PSA RA
Options Letter to IDEQ/ approval of recommended actions		21-Mar-95	21-May-95	Estimate 30 days for IDEQ review and approval of options
Implement options	Dependent on approval from IDEQ			Implement within 30 days of IDEQ approval

Notes:

1. Activities tied to flow chart for WSO activities
2. Assumes a 30-day review and appproval process by IDEQ
3. Dependent on subcontractor and BWC availability
4. Actual dates will be updated on a quarterly basis as the task date approaches
5. Evaluation of options will commence upon completion of evaluation of wells and PSA RA.

PLATES

PLATES



Harding Lawson Associates
Engineering and
Environmental Services

Water Column Above the Transducer- Sunrise Well
July - September 1994 Quarterly Report
Van Waters & Rogers Inc.
Boise, Idaho

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AG	22947 02	BEF	9/94	

APPENDIX A

APPENDIX A

BORING LOGS AND KEY TO THE UNIFIED SOIL CLASSIFICATION SYSTEM

TOP OF CASING
Elevation ________

GROUND SURFACE

TOP OF CASING at 3.5 ft below ground surface

12" DIA. BOREHOLE 0-67.0 ft

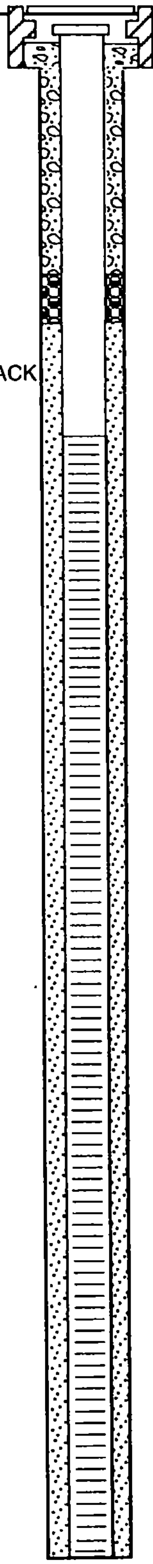
8" DIA. STAINLESS STEEL BLANK CASING 3.5 to 15.0 ft

GRANULAR BENTONITE 7.0 to 10.0 ft

BENTONITE PELLET SEAL 10.0 to 11.0 ft

COLORADO SI #8/12 SANDPACK 11.0 to 65.0 ft

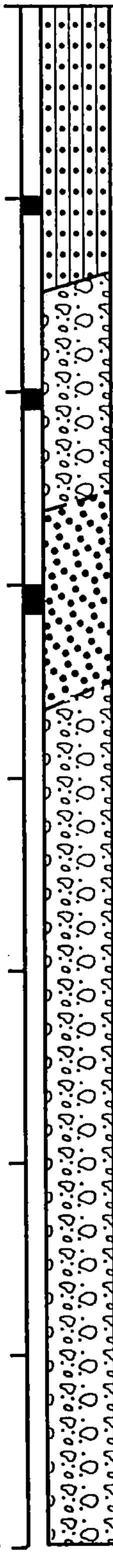
8" DIA. STAINLESS STEEL (0.020" slot size) SCREEN 15.0 to 65.0 ft



Equipment HSA/Cable Tool

Elevation ________ Date 07-14-94

Blows/foot	OVA Reading (ppm)	Depth (ft.)	Sample	
		0		DARK BROWN SILTY SAND (SM) moist, fine sand
				color change to red brown, fine to medium sand
	30	5		cobbles to 5 inch in diameter
				RED-BROWN SANDY GRAVEL (GW) wet, subrounded gravel, medium to coarse subrounded to angular sand
	1.4	10		water at 10.5 ft
				Hydropunch sample at 10.0 ft
	3.2	15		RED-BROWN GRAVELLY SAND (SW) medium to coarse sand
	3.2	20		LIGHT RED-BROWN SANDY GRAVEL (GW) coarse subrounded medium to coarse sand
				Hydropunch sample at 20.0 ft
				trace fines at 24.0 ft
	1.6	25		
		30		Hydropunch sample at 30.0 ft
		35		
		40		begin cable tool drilling at 40.0 ft due to excessive heaving sands



092294AG

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion FMEW-1
July - September 1994 Quarterly Report
Van Waters & Rogers Inc.
Boise, Idaho

PLATE **A-1**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AGc	22947 03	BPF	9/94	

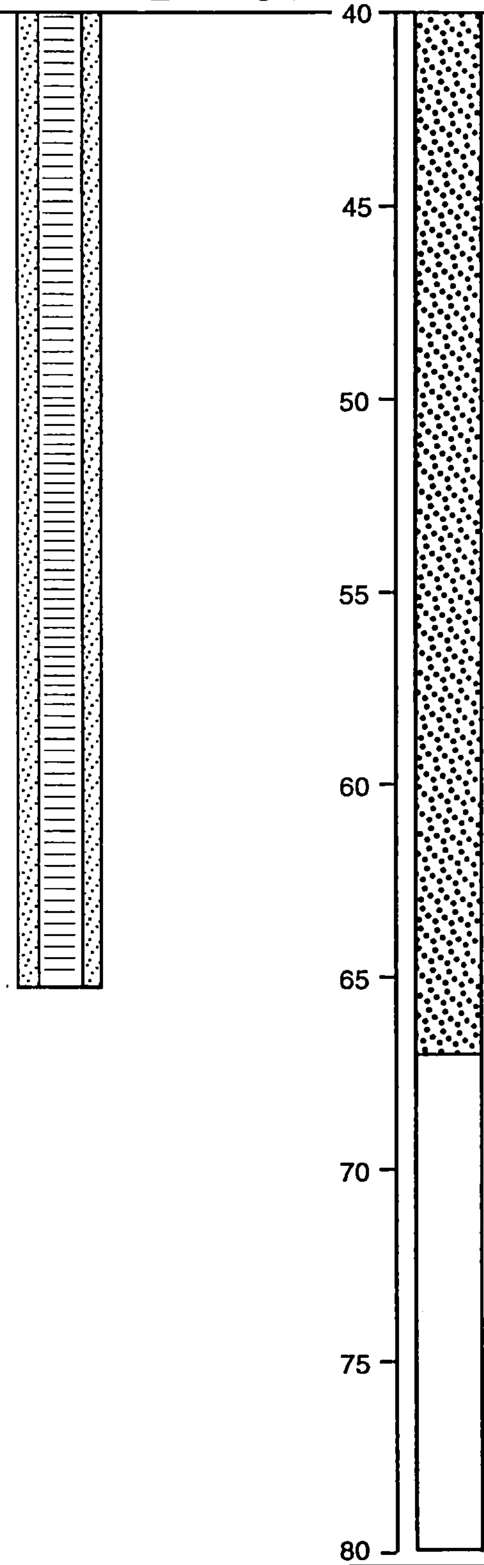
TOP OF CASING
Elevation ________

GROUND SURFACE

Blows/foot	OVA Reading (ppm)	Depth (ft.)	Sample

Equipment HSA/Cable Tool

Elevation ________ Date 07-14-94



Depth (ft.)	Description
40	YELLOW-BROWN SAND (SP) loose, wet
	medium to coarse sand, trace subrounded gravel
55	color change to olive-brown at 55.0 ft
60	begin to lose water in cable tool conductor casing at 60.0 feet
	sand becoming fine to medium
67	Bottom of boring at 67.0 ft

BOTTOM WELL CAP, HOLE CLEANED OUT to 65.0 ft

092094LZ

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion FMEW-1 Con't
July - September 1994 Quarterly Report
Van Waters & Rogers Inc.
Boise, Idaho

PLATE **A-1**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AGc	22947 03	BPF	9/94	

TOP OF CASING
Elevation ________

Blows/foot	OVA Reading (ppm)	Depth (ft.)	Sample

Equipment HSA

Elevation ________ Date 08-14-94

GROUND SURFACE

TOP OF CASING at 3.5 ft below ground surface

8.0" DIA. BOREHOLE
0-40.0 ft

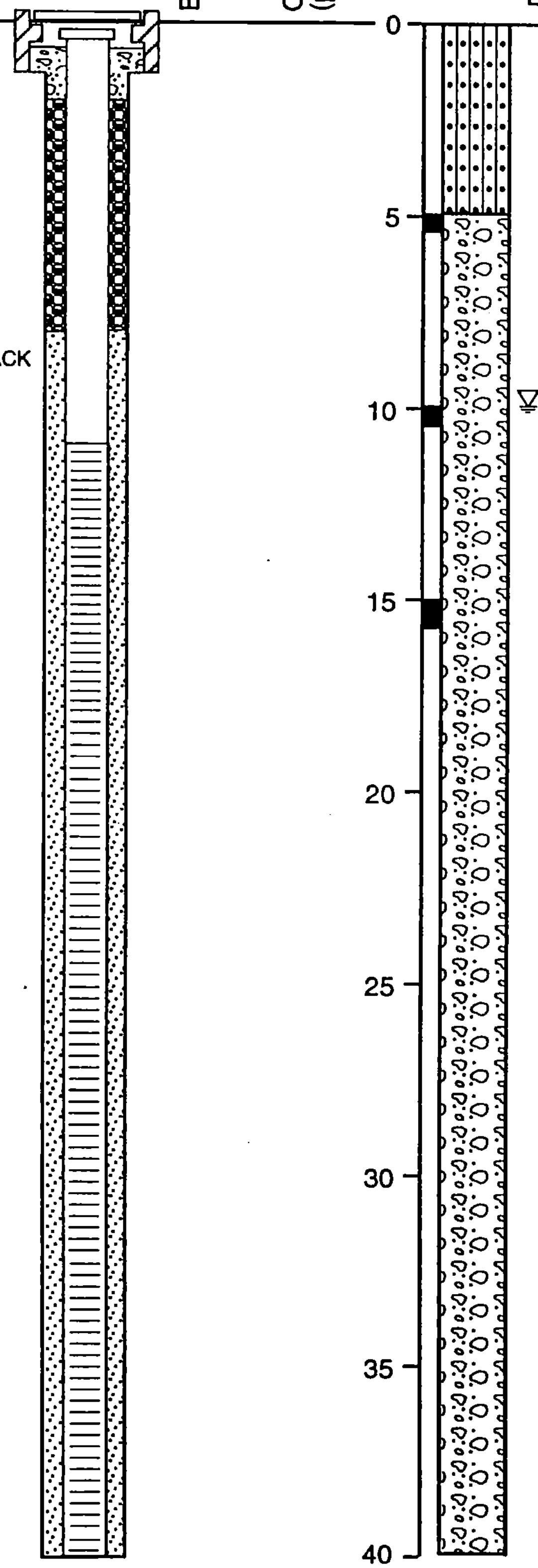
2" DIA. SCHED. 40 PVC BLANK CASING
0.25 to 10.0 ft

BENTONITE PELLET SEAL
2.0 to 8.0 ft

COLORADO #20/40 SANDPACK
8.0 to 40.0 ft

2" DIA. SCHEDULE 40 PVC (0.010" slot size) SCREEN
10.0 to 40.0 ft

BOTTOM WELL CAP, HOLE CLEANED OUT to 40.0 ft



DARK BROWN SILTY SAND (SM)
moist, fine sand, trace mica

color change to red brown, fine to medium sand

RED-BROWN SANDY GRAVEL (GW)
moist, trace silt

wet at 10.0 ft

trace cobbles at 17.0 ft, difficult drilling

color change to light red-brown at 20.0 ft

same as above

bottom of boring at 40.0 ft

092294AG

Harding Lawson Associates
Engineering and Environmental Services

HLA

Log of Boring and Well Completion FMMW-1
July - September 1994 Quarterly Report
Van Waters & Rogers Inc.
Boise, Idaho

PLATE **A-2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AGc	22947 03	BPF	9/94	

MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN No. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

SYMBOLS KEY

	- Bulk or Classification Sample
	- Sample preserved for possible laboratory analysis
	- Hydropunch sample
	- First-encountered groundwater level
	- Static groundwater level
(10YR 4/4)	- Munsell soil color – 1990 edition
NA	- Not available
ND	- Not detected

GRAIN SIZE CHART

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	ABOVE 12"	ABOVE 305
COBBLES	12" To 3"	305 to 76.2
GRAVEL	3" To No. 4	76.2 to 4.75
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.75
SAND	No. 4 to No. 200	4.75 to 0.075
coarse	No. 4 to No. 10	4.75 to 2.00
medium	No. 10 to No. 40	2.00 to 0.425
fine	No. 40 to No. 200	0.425 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

Source: ASTM D 2488-90, based on Unified Soil Classification System.

HLA

Harding Lawson Associates
Engineering and
Environmental Services

Key to Unified Soil Classification System
July - September 1994 Quarterly Report
Van Waters & Rogers Inc.
Boise, Idaho

PLATE
A-3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AGc	22947 03	BPF	9/94	

APPENDIX B

APPENDIX B

LABORATORY ANALYTICAL REPORTS FOR THE MONITORING/EXTRACTION WELL FMEW-1

ALCHEM LABORATORIES

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

LABORATORY REPORT

VAN WATERS & ROGERS
2723 S. COLE RD.
BOISE, IDAHO 83709

DATE COLLECTED: 07/08/94
TIME COLLECTED: 10:12
DATE RECEIVED: 07/08/94
DATE REPORTED: 07/08/94
COLLECTED: BRYAN LUND

ATTENTION: MR. MIKE GAUDETTE
PROJECT: BOISE, N. FIVE MILE ROAD / WATER
SOURCE-: FMEW1-03

LAB SAMPLE NUMBER - 59037

LABORATORY REPORT FOR "PURGABLE HALOCARBONS BY 8010"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS
REGULATED VOC'S (DRINKING WATER)		
Vinyl Chloride	0.2	* ND
1,1-Dichloroethylene	0.5	ND
1,1,1-Trichlorethane	0.5	ND
Carbon Tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
p-Dichlorobenzene	0.5	ND
Chlorobenzene	0.5	ND
o-Dichlorobenzene	0.5	ND
cis-1,2-Dichloroethene	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,2-Dichloropropane	0.5	ND
Methylene Chloride	0.5	ND
Tetrachloroethene	0.5	1.6
1,2,4-Trichlorobenzene	0.5	ND
1,1,2-Trichloroethane	0.5	ND

Date Analyzed: 07/08/94

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell

Suzanne Howell, Laboratory Manage

ALCHEM LABORATORIES

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS
THM'S (TRIHALOMETHANES)		
Bromodichloromethane	0.2	*ND
Chlorodibromomethane	0.5	ND
Bromoform	1.0	ND
Chloroform	0.2	ND

UNREGULATED VOC's (DRINKING WATER)

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/L)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
Toluene	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND

* ND = None Detectec

CLIENT: VAN WATERS & ROGERS INC. / ATTN: MIKE GAUDETTE

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

LABORATORY REPORT

VAN WATERS & ROGERS
2723 S. COLE RD.
BOISE, IDAHO 83709

DATE COLLECTED: 07/07/94
TIME COLLECTED: 13:33
DATE RECEIVED: 07/07/94
DATE REPORTED: 07/08/94
COLLECTED: B. LUND

ATTENTION: MR. MIKE GAUDETTE
PROJECT: BOISE, N. FIVE MILE ROAD / WATER
SOURCE-: FMEW1-02

LAB SAMPLE NUMBER - 58984

LABORATORY REPORT FOR "PURGABLE HALOCARBONS BY 8010"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS
REGULATED VOC'S (DRINKING WATER)		
Vinyl Chloride	0.2	* ND
1,1-Dichloroethylene	0.5	ND
1,1,1-Trichlorethane	0.5	ND
Carbon Tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
p-Dichlorobenzene	0.5	ND
Chlorobenzene	0.5	ND
o-Dichlorobenzene	0.5	ND
cis-1,2-Dichloroethene	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,2-Dichloropropane	0.5	ND
Methylene Chloride	0.5	ND
Tetrachloroethene	0.5	2.7
1,2,4-Trichlorobenzene	0.5	ND
1,1,2-Trichloroethane	0.5	ND

Date Analyzed: 07/07/94

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell

Suzanne Howell, Laboratory Manage:

ALCHEM LABORATORIES

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS
THM'S (TRIHALOMETHANES)		
Bromodichloromethane	0.2	•ND
Chlorodibromomethane	0.5	ND
Bromoform	1.0	ND
Chloroform	0.2	ND

UNREGULATED VOC's (DRINKING WATER)

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICA RESULTS (ug/L
Bromobenzene	0.5	•ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
Toluene	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND

• ND = None Detecte

CLIENT: VAN WATERS & ROGERS INC. / ATTN: MIKE GAUDETTE

ALCHEM LABORATORIES

Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water and Soil Analysis

LABORATORY REPORT

VAN WATERS & ROGERS
2723 S. COLE RD.
BOISE, IDAHO 83709

DATE COLLECTED: 07/07/94
TIME COLLECTED: 12:51
DATE RECEIVED: 07/07/94
DATE REPORTED: 07/08/94
COLLECTED: B. LUND

ATTENTION: MR. MIKE GAUDETTE
PROJECT: BOISE, N. FIVE MILE ROAD / WATER
SOURCE-: FMEW1-01

LAB SAMPLE NUMBER - 58983

LABORATORY REPORT FOR "PURGABLE HALOCARBONS BY 8010"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS
REGULATED VOC'S (DRINKING WATER)		
Vinyl Chloride	0.2	* ND
1,1-Dichloroethylene	0.5	ND
1,1,1-Trichlorethane	0.5	ND
Carbon Tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	1.0
p-Dichlorobenzene	0.5	ND
Chlorobenzene	0.5	ND
o-Dichlorobenzene	0.5	ND
cis-1,2-Dichloroethene	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,2-Dichloropropane	0.5	ND
Methylene Chloride	0.5	ND
Tetrachloroethene	0.5	5.5
1,2,4-Trichlorobenzene	0.5	ND
1,1,2-Trichloroethane	0.5	ND

Date Analyzed: 07/07/94

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell

Suzanne Howell, Laboratory Manager

ALCHEM LABORATORIES

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS
THM'S (TRIHALOMETHANES)		
Bromodichloromethane	0.2	*ND
Chlorodibromomethane	0.5	ND
Bromoform	1.0	ND
Chloroform	0.2	ND

UNREGULATED VOC's (DRINKING WATER)

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/L)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
Toluene	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND

* ND = None Detected

CLIENT: VAN WATERS & ROGERS INC. / ATTN: MIKE GAUDETTE

CHAIN OF CUSTODY FORM

Alchem Laboratory

104 W. 31st Street
Boise, Idaho 83714
(208) 336-1172

Client: Van Waters & Rogers Inc

Address: 2723 S. Cole Rd

City: Boise State: ID Zip: 83709

Sampler(s): B Lund

Project or Site: Boise / N. Five Mile Road

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION	Water	Soil	Other	BTEX	418.1 (I.R.) TPH	8015 (G.C.) TPH	VOC's / 8010	TPH-G	TPH-D	HCID	TCLP	SEMI-VOLATILES (GC/MS)	NUMBER OF CONTAINERS
58483	7/7/94	1251	FMEW1-01	X						X						
58484	7/7/94	1333	FMEW1-02	X						X						
	7/7/94	802	TB-01	X						X						

Priority analysis requested - 24 hr or less TAT requested

208/362-6545 - Michael Gaudette

208/362-6548 - FAX

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	7-7-94 1550	Michael Gaudette
Michael Gaudette	7-7-94	

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Y	N	For Lab Use
		[signature]	7/7/94 6:03	X		Received w/Seal Intact
				X		Label Tag, COC Agree

Harding Lawson Associates
1325 Fourth Avenue, Suite 2110
Seattle, Washington 98101
206/622-0812
Telecopy: 206/292-8619

CHAIN OF CUSTODY FORM

Lab: ALCHEM ✓

Job Number: 20783.0032

Name/Location: WR Base / Five Mile

Project Manager: M. Gaulette

Samplers: Bryan D Lund

Recorder: [signature] (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCl	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	ICP METALS	EPA 8015M/TPH	ANALYSIS REQUESTED
	X							2				94	07	08	1012	FMEW1-03	X						# 59637
	~~X~~							~~2~~				~~94~~	~~07~~	~~08~~		~~FMEW1-04~~	~~X~~						BDL
	X							2								TB-02	X						

24 hr or less TAT requested
208/362-6545
208/362-6548 (FAX)

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
[signature]	M. Gaulette	7-8-94 1145
M. Gaulette		

DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
		Jennifer Dorman	7/8/94 12:15

METHOD OF SHIPMENT: In person

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name: Van Waters & Rogers - Boise

Job Number: ______

Recorded by: Michael [signature] (Signature)

Well No.: EMEW-1

Well Type: ☒ Monitor ☐ Extraction ☐ Other ______

Well Material: ☐ PVC ☒ St. Steel ☐ Other ______

Date: 8-15-94 Time: 0953

Sampled by: MW (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☐ 4-inch ☐ 6-inch ☒ Other 8 inch

Total Depth of Casing (TD in feet BTOC): 65 ft

Water Level Depth (WL in feet BTOC): 10 ft (bgs)

Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☒ 5 ☐ 10 ☒ Other 3-5

PURGE METHOD

☐ Bailer - Type: ______
☒ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: ______
☐ Other - Type: ______

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☒ Other 40 ft

Depth in feet ~~(BTOC)~~ BGS: ______

Screen Interval in Feet ~~(BTOC)~~ bgs from 10 to 65

PURGE VOLUME CALCULATION

$$\left(\underset{\text{TD (feet)}}{65} - \underset{\text{WL (feet)}}{10} \right) \times \underset{\text{D (inches)}}{8}^{2} \times \underset{\text{\# Vols}}{3} \times 0.0408 = \underset{\text{Calculated Purge Volume}}{430} \text{ gallons}$$

PURGE TIME

0900 Start 0940 Stop 40 Elapsed

PURGE RATE

Initial 20 gpm Final 20 gpm

ACTUAL PURGE VOLUME

800 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other ______
35	6.3	—	17	

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other ______
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): Clear

Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☒ Other Tank

WELL SAMPLING

SAMPLING METHOD

☒ Bailer - Type: Stainless steel
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: ______

☐ Same As Above
☐ Grab - Type: ______
☐ Other - Type: ______

SAMPLING DISTRIBUTION

Sample Series: ______

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
94081501	40 mL/vial	8010	HCl	ATI	
C					

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.
94081501	94081502

Blank Samples

Type	Sample No.
Trip	94081503

Other Samples

Type	Sample No.

AnalyticalTechnologies,Inc. 560 Naches Avenue, S.W., Suite 101, Renton, WA 98055 (206) 228 8335
Karen L. Mixon, Laboratory Manager

ATI I.D. # 408142

September 2, 1994

Harding Lawson Associates
105 Digital Drive
Novato CA 94949

Attention : Michelle Beekman

Project Number : 22947 061

Project Name : VWR Boise

Dear Ms. Beekman:

On August 16, 1994, Analytical Technologies, Inc. (ATI), received four samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Sincerely,

V Bayly

Victoria L. Bayly
Project Manager

VLB/hal/mrj

Enclosure

Analytical Technologies, Inc

ATI I.D. # 408142

SAMPLE CROSS REFERENCE SHEET

CLIENT : HARDING LAWSON ASSOCIATES
PROJECT # : 22947 061
PROJECT NAME : VWR BOISE

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
408142-1	94081501	08/15/94	WATER
408142-2	94081502	08/15/94	WATER
408142-3	94081503	08/15/94	WATER
408142-4	94081504	08/15/94	WATER

----- TOTALS -----

MATRIX	# SAMPLES
WATER	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

AnalyticalTechnologies,Inc

ATI I.D. # 408142

ANALYTICAL SCHEDULE

CLIENT : HARDING LAWSON ASSOCIATES
PROJECT # : 22947 061
PROJECT NAME : VWR BOISE

ANALYSIS	TECHNIQUE	REFERENCE	LAB
PURGEABLE HALOCARBONS	GC/ELCD	EPA 8010	R

R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PTL = ATI - Portland
ANC = ATI - Anchorage
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 408142

CASE NARRATIVE

CLIENT : HARDING LAWSON ASSOCIATES
PROJECT # : 22947 061
PROJECT NAME : VWR BOISE

CASE NARRATIVE: VOLATILE ORGANICS ANALYSIS

Four (4) water samples were received by ATI on August 16, 1994, for the following analysis: EPA method 8010.

All corresponding quality assurance and quality control results defined as matrix spike/matrix spike duplicate (MS/MSD), blank spike (BS), method blank and surrogate recoveries were within the established control limits.

Analytical Technologies, inc

ATI I.D. # 408142

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HARDING LAWSON ASSOCIATES	DATE SAMPLED	: N/A
PROJECT #	: 22947 061	DATE RECEIVED	: N/A
PROJECT NAME	: VWR BOISE	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 08/26/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<2.0
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<1.0
VINYL CHLORIDE	

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	99	58 - 126

AnalyticalTechnologies,Inc

ATI I.D. # 408142-1

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HARDING LAWSON ASSOCIATES	DATE SAMPLED	: 08/15/94
PROJECT #	: 22947 061	DATE RECEIVED	: 08/16/94
PROJECT NAME	: VWR BOISE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94081501	DATE ANALYZED	: 08/26/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	1.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<1.0

	SURROGATE PERCENT RECOVERY	LIMITS
BROMOCHLOROMETHANE	95	58 - 126

Analytical Technologies, Inc.

ATI I.D. # 408142-2

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HARDING LAWSON ASSOCIATES	DATE SAMPLED	: 08/15/94
PROJECT #	: 22947 061	DATE RECEIVED	: 08/16/94
PROJECT NAME	: VWR BOISE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94081502	DATE ANALYZED	: 08/26/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	1.7
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<1.0

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	92	58 - 126

AnalyticalTechnologies,inc

ATI I.D. # 408142-3

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HARDING LAWSON ASSOCIATES	DATE SAMPLED	: 08/15/94
PROJECT #	: 22947 061	DATE RECEIVED	: 08/16/94
PROJECT NAME	: VWR BOISE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94081503	DATE ANALYZED	: 08/26/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<1.0

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	95	58 - 126

Analytical Technologies, Inc.

ATI I.D. # 408142-4

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HARDING LAWSON ASSOCIATES	DATE SAMPLED	: 08/15/94
PROJECT #	: 22947 061	DATE RECEIVED	: 08/16/94
PROJECT NAME	: VWR BOISE	DATE EXTRACTED	: N/A
CLIENT I.D.	: 94081504	DATE ANALYZED	: 08/26/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8010	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<1.0
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<1.0
CHLOROFORM	<0.2
CHLOROMETHANE	<2.0
1,2-DIBROMOETHANE (EDB)	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DIBROMOCHLOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
CIS-1,2-DICHLOROETHENE	<0.2
TRANS-1,2-DICHLOROETHENE	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	1.4
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<1.0

SURROGATE PERCENT RECOVERY		LIMITS
BROMOCHLOROMETHANE	105	58 - 126

Analytical Technologies, inc

ATI I.D. # 408142

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : HARDING LAWSON ASSOCIATES
PROJECT # : 22947 061
PROJECT NAME : VWR BOISE
SAMPLE MATRIX : WATER
EPA METHOD : 8010

SAMPLE I.D. # : BLANK
DATE EXTRACTED : N/A
DATE ANALYZED : 08/26/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
CHLOROBENZENE	<0.500	8.00	7.70	96	N/A	N/A	N/A
1,1-DICHLOROETHENE	<0.200	8.00	9.98	125	N/A	N/A	N/A
TRICHLOROETHENE	<0.200	8.00	6.79	85	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
CHLOROBENZENE	79 - 141	33
1,1-DICHLOROETHENE	56 - 158	22
TRICHLOROETHENE	72 - 138	21

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOCHLOROMETHANE	58	N/A	58 - 126

AnalyticalTechnologies,Inc

ATI I.D. # 408142

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : HARDING LAWSON ASSOCIATES
PROJECT # : 22947 061
PROJECT NAME : VWR BOISE
SAMPLE MATRIX : WATER
EPA METHOD : 8010

SAMPLE I.D. # : 408142-1
DATE EXTRACTED : N/A
DATE ANALYZED : 08/26/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
CHLOROBENZENE	<0.500	8.00	6.50	81	6.76	85	4
1,1-DICHLOROETHENE	<0.200	8.00	8.00	100	8.63	108	8
TRICHLOROETHENE	<0.200	8.00	5.93	74	6.41	80	8

CONTROL LIMITS	% REC.	RPD
CHLOROBENZENE	61 - 160	33
1,1-DICHLOROETHENE	37 - 182	22
TRICHLOROETHENE	61 - 149	21

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOCHLOROMETHANE	102	109	58 - 126

Harding Lawson Associates
7655 Redwood Boulevard
P.O. Box 578
Novato, California 94948
415/892-0821
Telecopy: General: 415/892-0831
Accounting: 415/898-1052

CHAIN OF CUSTODY FORM

40042

Lab: ATI

Samplers: MG

Job Number:

Name/Location: Van Waters & Rogers Inc - Boise

Project Manager: M. Goulette

Recorder: Michael Goulette (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCl	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	ICP METALS	EPA 8015M/TPH
	X							2	94	08	1501	94	08	15			X					
	X							2	94	08	1502	94	08	15			X					
	X							2	94	08	1503	94	08	15			X					
	X							2	94	08	1504	94	08	15			X					

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						Fax and send results to Mike Goulette (VW&R) @ 208/362-6548 (Fax) 2723 S. Cole Rd Boise, ID 83709 and Beth Flynn @ HLA 415/884-3177 (phone) 415/884-3300 (FAX)

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
Michael Goulette 8-15-94	[signature]	8/16/94 1000
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME

DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

METHOD OF SHIPMENT

Laboratory Copy White | Project Office Copy Yellow | Field or Office Copy Pink

6533

DISTRIBUTION

Quarterly Progress Report
April - June 1994
Boise, Idaho

September 28, 1994

Copy No. ___

Copy 1:	Mr. Mike Gaudette Van Waters & Rogers Inc. 2723 S. Cole Road Boise, Idaho 83709
Copy 2:	Mr. Wayne Grotheer Van Waters & Rogers Inc. 6100 Carillon Point Kirkland, Washington 98033
Copy 3:	Mr. Allan Bakalian Van Waters & Rogers Inc. 6100 Carillon Point Kirkland, Washington 98033
Copies 4-7:	Mr. Scott Vokey Preston Gates & Ellis Attorneys at Law 5400 Columbia Center 701 Fifth Avenue Seattle, Washington 98104-7078
Copies 8-10:	Mr. Ron Lane Idaho Department of Health and Welfare Division of Environmental Quality 1410 North Hilton Boise, Idaho 83706-1253

DISTRIBUTION

Quarterly Progress Report
April - June 1994
Boise, Idaho

September 28, 1994

Copies 11-12:	Mr. Ed Squires Boise Water Corporation Boise, Idaho 83720
Copies 13-14:	Mr. Rex Frazier, President Boise Mall Development Company c/o Price Development Company 35 Century Parkway Salt Lake City, Utah 84115
Copies 15-16:	Mr. John Lerma Nielsen Warehousing Company Monteford Brooks Shirley L. O'Reilly Crowe c/o Brady Lerma Thomas 877 W. Main First Interstate Center, Suite 80 Boise, Idaho 83702
Copies 17-23:	Harding Lawson Associates

SMB/CRS/yml/D36338-H